

**Abstract**

The present invention relates to a nucleotide sequence of expression cassette OXY-1 of SEQ ID No. 1, a modified staphylokinase SAK-2 gene of SEQ ID No. 2, a peptide sequence of modified staphylokinase SAK-2 gene, of SEQ ID No. 3, three plasmids having International Deposition Nos. BPL-0019, BPL-0020, and BPL-0021, and their corresponding three recombinant *E. Coli*; also invention relates to a process for over-producing staphylokinase and its analogues by modulating level of oxygen of its growth medium in a host system, and lastly, a method of dissolving blood clot in a subject in need thereof.